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COMPLETE SPECIFICATION

A Device for Filtering Liquids

We, FOSTER, YATES & THOM LIMITED, a British Company, of Canal Foundry, Blackburn, and NORMAN WAYLAND LOTSLEY, a British Subject, of the said Company's address, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 The present invention relates to a device for filtering liquids, and more particularly oils.

15 The device according to the present invention comprises a filter unit in which the liquid is passed successively through a plurality of filtering media in bulk or mass form, and syphonic device for discharging the filtrate.

20 The innermost of the compartments contains no filtering material, whilst the other compartments do contain such material.

25 The accompanying drawing illustrates one form of construction of the apparatus which comprises a container tank *a* constructed of sheet metal of welded manufacture, supported by means of angle iron lugs welded on.

30 The tank is constructed with a conical shaped base *b* and has a perforated separating plate *c* near its lower part. This plate is supported at the tank sides by lugs fixed to the tank by welding. A combined top cover and funnel pipe *d* is secured to the tank top, the funnel pipe being carried to the bottom of the tank.

40 The oil to be cleaned is passed in at the funnel at the cover and traverses the funnel pipe to its outlet below the perforated plate *c*. As the tank fills the oil passes up through the perforated plate which obstructs the passage of the larger impurities which fall into the conical base of the container. The conical base of the

45 container carries a sludge outlet cock *e* which may be opened at intervals for the removal of the sludge and other impurities by a washing action by gravity. In the central portion of the body of the tank container there is situated a filtering unit consisting of a cage *f* of cylindrical form divided into three concentric compartments, the walls of all three such compartments being of perforated metal or
55 metal gauze, and being all fixed together

and to a central tube *g* by autogenous welding.

The outer compartment *f*¹ is packed with rough cotton waste; the second compartment *f*² is packed with fine cotton wool, whilst the inner compartment *f*³ is not packed with filtering material. The central tube *g* which supports the filtering unit is closed at the lower end by a plug welded in, and it is drilled between the upper and lower ends of the cylinder. This tube passes through the top of the container and is shaped to form a syphon discharging into a lower tank *h*.

70 The action of filtering takes place by the operation of syphonic action on the oil in the container *a*, this oil being drawn through the outer compartment of the container where a portion of the impurities is removed by the cotton waste filtering material, thence through the cotton wool where the remainder of the impurities are removed, and then through the inner chamber to the central outlet tube *g* and finally into the lower tank *h*.

80 A steam coil *k*, constructed of iron, steel or other metal pipe is arranged in the container *a* and during operation of the apparatus steam is passed through this coil, thereby passing heat to the body or oil in the container *a*, so reducing the viscosity of the oil to further the separation of all solid, liquid and gaseous impurities and to enhance the action of the syphonic piping device.

90 The steam coil *k* has extended branches to pass through the top of the container *a*, one of which branches is fitted with a regulating steam valve *l* at which steam may be admitted from a steam supply to which the valve may be connected. The other branch which serves as an outlet for condensation may be connected to a waste service or to a steam trap.

100 The syphon pipe *g* has fitted at its highest point a priming cock, not shown, with funnel attached in order that clean or new oil may be admitted into the syphonic system to cause the syphonic action to commence in operation. A stop or shut-off valve *m* is placed in the syphon pipe *g* at a convenient point to maintain the syphonic action while the flow of oil is temporarily arrested.

110 The lower end of the syphon pipe *g* is

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Price 33p

upturned to ensure that any air entrained in the issuing oil will pass out of the pipe into the body of the oil in the lower tank *h* and so to the surface of the oil.

5 Oil level windows are fitted to both tanks to act as indicators for renewing the supply of uncleaned oil into the tank *a* and renewing the flow of cleaned oil into the tank *h*.

10 Although the filtering unit has been described as a concentric three-compartment one in which two different filtering media are employed, this device may be replaced by a three-stage four-compartment one.

15 In this case the outer compartment will contain cotton waste, a second and adjacent compartment will contain a mineral substance, and a third compartment located between the second-mentioned compartment and an innermost and empty compartment will contain cotton wool.

20 The mineral substance is preferably pulverised or partly pulverised siliceous or calcareous material.

25 Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:

1. A filtering device for liquids and comprising a filter unit in which the liquid is passed successively through a plurality of textile filtering media in bulk or mass form and a syphonic device for discharging the filtrate. 35

2. A filtering device according to Claim 1, in which the filter unit comprises a plurality of concentric compartments surrounding a central outlet pipe, and in which the innermost of the compartments contains no filtering material, whilst the other compartments do contain such material. 40

3. A filtering device according to Claim 2, in which one of the compartments contains waste cotton material, whilst a second compartment contains cotton wool. 45

4. A filtering device according to Claim 2, in which one of the compartments contains mineral material. 50

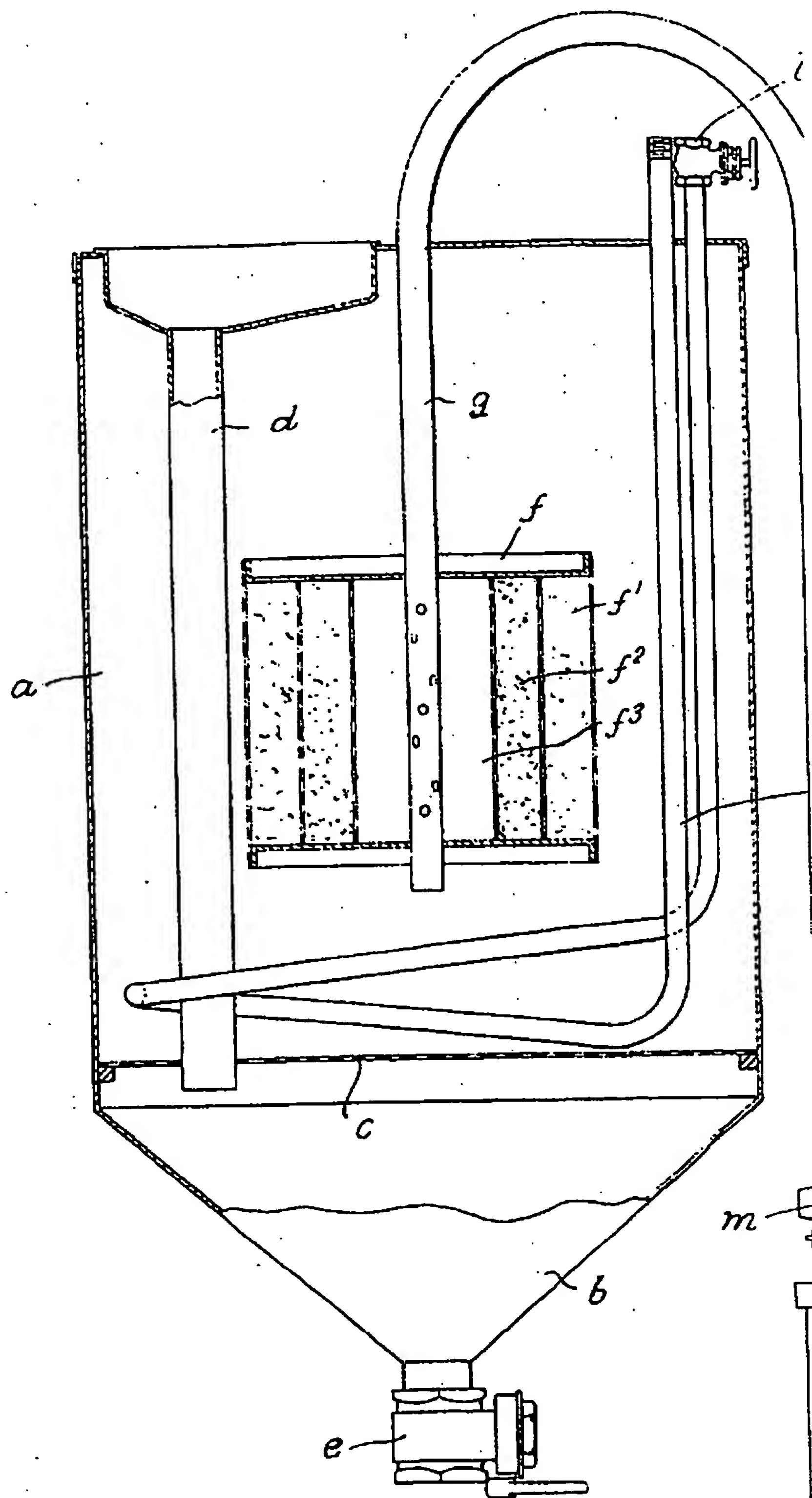
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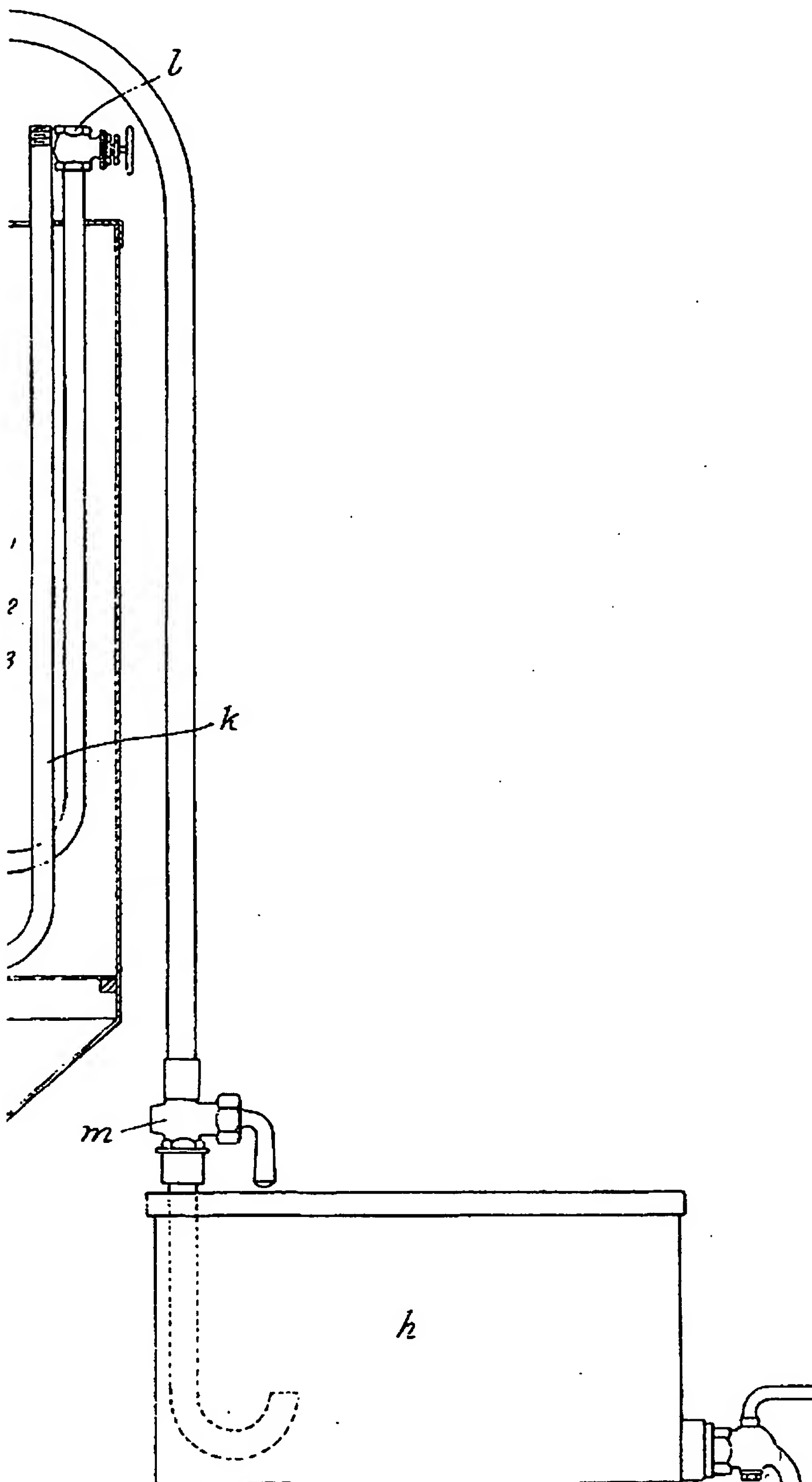
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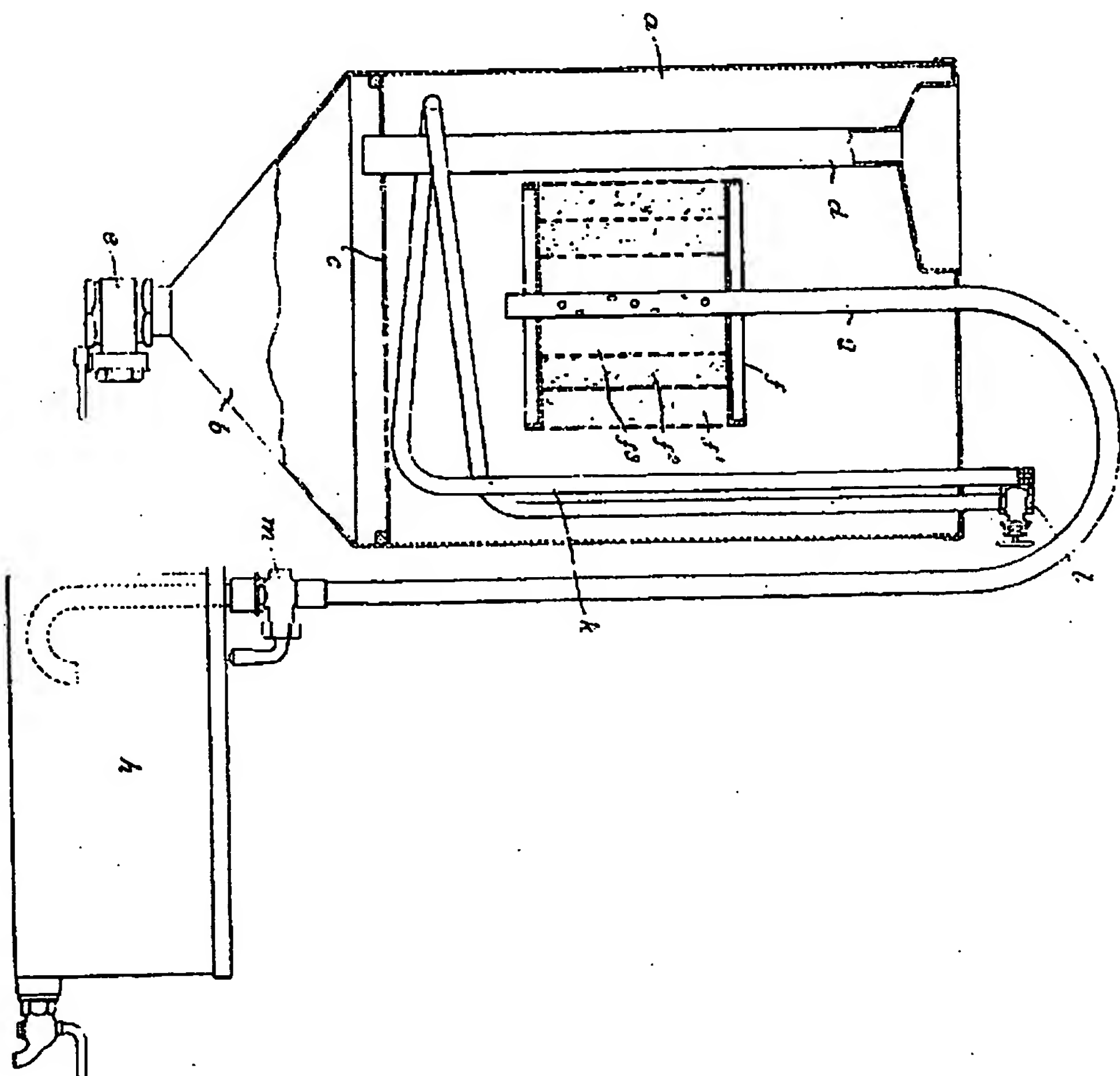
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